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EXAMINER

ROMANO, JOHN J

ART UNIT PAPER NUMBER

2122

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/008,864	Applicant(s) BATES ET AL.	
	Examiner John J Romano	Art Unit 2122	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/06/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims **1-27** are pending in this action.

Claim Objections

1. Claim **14** is objected to because of the following informalities: "an debug program". Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim **13** recites the limitation "the digital logic device" in section (a). There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language

2. Claims **1, 3-11, and 13-24** are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Wygodny et al., US 6,282,701 B1, (hereinafter **Wygodny**).

3. In regard to claim 1, **Wygodny** discloses:

- *"A method of tracing the activity of an expression, said method comprising the steps of ..."* (E.g., see Figure 1C & Column 2, line 59-Column 3, line 1), wherein the data element may be a variable.
- *"...(a) specifying a machine-implemented process in which a trigger expression is to be traced..."* (E.g., see Figure 5 & Column 12, lines 44-47), wherein the trade option window allows the developer to specify which functions or machine-implemented process to trace.
- *"...(b) specifying the trigger expression to be traced in the machine-implemented process ..."* (E.g., see Figure 5 & Column 15, lines 52-55), wherein the developer may select which variables or expressions to be traced, wherein the execution of the traced variable triggers the trace.
- *"...(c) storing the state of the trigger expression when it is active within the machine-implemented process without interrupting the process ..."* (E.g., see Figure 1A & Column 7, lines 29-31), wherein the TCI file (120) specifies what information will be traced and stored.
- *"...(d) restoring the state of the trigger expression when requested."* (E.g., see Figure 1C & Column 7, lines 39-43), wherein the developer analyzes the trace data.

4. In regard to claim 3, the rejections of base claim 1 are incorporated.

Furthermore, **Wygodny** discloses:

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- *"...(a) creating a history of the trigger expression comprising storing each state of the trigger expression when it is active."* (E.g., see Figure 1C & Column 26, lines 33-34), wherein the breakpoint is triggered whenever the target address gets executed or is active. The interrupt then causes the variable or expression to be recorded (history).

5. In regard to claim 4, the rejections of base claim 3 are incorporated.

Furthermore, **Wygodny** discloses:

- *"...(a) displaying the history such that the state of the trigger expression each time the trigger expression was active can be displayed separately."* (E.g., see Figure 1C & Column 8, lines 15-20), wherein the data stored or history is displayed according to filters set by the user allowing the user to display a particular triggered expression separately if desired.

6. In regard to claim 5, the rejections of base claim 1 are incorporated.

Furthermore, **Wygodny** discloses:

- *"...results in an L value during the machine-implemented process."* (E.g., see Figure 1C & Column 8, lines 7-8), wherein the trace data may be a variable associated with an assembly address (memory location).

7. In regard to claim 6, the rejections of base claim 5 are incorporated.

Furthermore, **Wygodny** discloses:

- "...wherein the activity is a call to a memory location of the trigger expression." (E.g., see Figure 1C & Column 26, line 33-34), wherein the trigger happens (activity) whenever the address is executed which inherently includes a read/write operation (call to memory).

8. In regard to claim 7, the rejections of base claim 6 are incorporated.

Furthermore, **Wygodny** discloses:

- "...the call to a memory location is a Read and/or a Write." (E.g., see Figure 1C & Column 26, line 33-34), wherein the trigger happens (activity) whenever the address is executed which inherently encompasses a read and write operation (call to memory).

9. In regard to claim 8, the rejections of base claim 1 are incorporated.

Furthermore, **Wygodny** discloses:

"...(a) specifying at least one attached expression; (b) storing the state of the at least one attached expression when the trigger expression is active within the machine-implemented process; and (c) restoring the state of the at least one attached expression when requested." (E.g., see Figure 3A & Column 18, lines 30-43), wherein the developer can choose any arguments, return values and selected source lines, thereby storing the state of a chosen function and attached expressions or variables, wherein trace can then be displayed according to the developers choice (restoring) when requested.

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10. In regard to claim 9, the rejections of base claim 1 are incorporated.

Furthermore, **Wygodny** discloses:

- "...*the machine-implemented process is a computer program.*" (E.g., see Figure 6 & Column 5, lines 20-23), wherein the user can trace a program.

11. In regard to claim 10, the rejections of base claim 1 are incorporated.

Furthermore, **Wygodny** discloses:

- "...*included in an object level trace program.*" (E.g., see Figure 6 & Column 4, lines 43-50), wherein included in a trace program which may trace object code as disclosed.

12. In regard to claim 11, the rejections of base claim 1 are incorporated.

Furthermore, **Wygodny** discloses:

- "...*included in a debug program.*" (E.g., see Figure 1A & Column 4, lines 43-50), wherein the invention provides debugging of a computer program.

13. In regard to claim 13, **Wygodny** discloses:

- "*A tracing device...*" (E.g., see Figure 1A-1C, (106) & Column 18, lines 7-14), wherein a (tracing device) Bugtrapper Analyzer is disclosed.
- "... *(a) a memory functionally connected to the digital logic device capable of executing a sequence of instructions...*" (E.g., see Figure 1A & Column 5, lines 4-6), wherein windows-NT is disclosed in terms of the invention wherein, a memory functionally connected to a digital

logic device capable of executing a sequence of instructions is inherent.

- "...*(b) a program to monitor the activity of an expression during the execution of the sequence of instructions...*" (E.g., see Figure 1B & Column 3, lines 7-12), wherein a program monitors activity during execution.
- "... *(c) a snapshot of the state of the expression every time the expression is active during the execution of the sequence of instructions...*" (E.g., see Figure 1C & Column 26, lines 33-34), wherein the breakpoint is triggered whenever the target address gets executed or is active. The interrupt then causes the variable or expression to be stored (snapshot).
- "...*(d) a history stored in the memory, the history being a plurality of snapshots...*" (E.g., see Figure 1C & Column 26, lines 33-34), wherein the breakpoint is triggered whenever the target address gets executed or is active. Causing a plurality of expressions to be stored (history).
- "...*(e) a state restorer which restores the state of the expression in a snapshot...*" (E.g., see Figure 12 & Column 413, lines 29-32), wherein the state expression of a snapshot is restored.
- "...*(f) a user interface by which a user may interact with the program, a snapshot, and the history.*" (E.g., see Figure 3A & Column 18, lines 15-

29), wherein a user interface by which a user may interact with the program, a snapshot, and a history is disclosed.

14. In regard to claims **14** and **15**, the rejections of base claim **13** are incorporated. See rejections of claims **11** and **10**, respectively, wherein, all claimed limitations have also been addressed and/or cited as set forth above.

15. In regard to claim **16**, the rejections of base claim **13** are incorporated.

Furthermore, **Wygodny** discloses:

- "...an attachment expression profiler which stores the state at least one attachment expression with each snapshot." (E.g., see Figure 3A & Column 18, lines 30-43), wherein the developer can choose any arguments, return values and selected source lines, thereby storing the state of a chosen function and attached expressions or variables, wherein trace can then be displayed according to the developers choice (restoring) when requested.

16. In regard to claim **17**, the rejections of base claim **13** are incorporated.

Furthermore, **Wygodny** discloses:

- "...the tracing device and the digital logic device are incorporated into the same computer." (E.g., see Figure 1B & Column 5, lines 37-53), wherein the device that does the tracing (trace library, (102)) is on the clients computer.

17. In regard to claim **18**, the rejections of base claim **13** are incorporated.

Furthermore, **Wygodny** discloses

- "...the tracing device and the digital logic device are separate units connected by a data communications link." (E.g., see Figure 2 & Column 6, lines 55-65), wherein the device that does the tracing (trace library, (124)) is separated from the digital logic device and connected by a data communications link as shown.

18. In regard to claim 19, **Wygodny** discloses:

- "A processing device to trace the activity of an expression in a computer device..." (E.g., see Figure 3 & Column 18, lines 7-14), wherein a tracing device is disclosed.
- "... (a) a processor; (b) a memory (Figure 1B, 122) functionally connected to the processor; (c) a first computer program (102), executing by the processor in which the expression is active; (d) a second computer program (125) to trace the activity of the expression within the memory during the execution of first computer program..." (E.g., see Figure 1B & Column 7, lines 29-31), wherein the customers site shown in Figure 1B inherently has a processor with a functionally connected memory to analyze the program and store the traced data to the log trace log file (122). Additionally, wherein the TCI file (120) specifies what information will be traced and stored.
- "... (e) a snapshot which stores the state expression every time the expression..." (E.g., see Figure 1B & Column 3, lines 7-12), wherein a

program monitors activity during execution and stores the state (snapshot) when the expression is active based on the trace options.

- "... (f) an attachment expression profiler..." (E.g., see Figure 3A & Column 18, lines 30-43), wherein the developer can choose any arguments, return values and selected source lines, thereby storing the state (profiler) of a chosen function and attached expressions or variables, wherein trace can then be displayed according to the developers choice (restoring) when requested.

The remaining limitations are addressed and/or cited as set forth above in claim

13.

19. In regard to claim **20**, claim **20** is a profiler version of the method and apparatus claims that have been addressed in the above, claims **1**, **8**, **13** and **19**, wherein all claimed limitations have also been addressed and/or cited as set forth above.

20. In regard to claim **21**, the rejections of base claim **20** are incorporated.

Furthermore, **Wygodny** discloses:

- "...means to attach each state of the at least one attachment expression to the snapshot of the particular expression/variable when taken..." (E.g., see Figure 3A & Column 18, lines 30-43), wherein the developer can choose any arguments, return values and selected source lines, thereby storing the state of a chosen function and attached expressions or variables when taken, wherein trace can then

be displayed according to the developers choice (restoring) when requested.

21. In regard to claim **22**, the rejections of base claim **20** are incorporated.

Furthermore, **Wygodny** discloses:

- "...means to delete the profile." (E.g., see Figure 1B & Column 19, lines 15-19), wherein old records are deleted.

22. In regard to claim **23**, the rejections of base claim **20** are incorporated.

Furthermore, **Wygodny** discloses:

- "...means to change the particular expression/variable.." (E.g., see Figure 5 & Column 15, lines 43-55), wherein the developer can deselect or select (change) lines and variables.

23. In regard to claim **24**, the rejections of base claim **20** are incorporated.

Furthermore, **Wygodny** discloses:

- "...means to change the at least one attachment expression." (E.g., see Figure 5 & Column 15, lines 43-55), wherein the developer can deselect or select (change) lines and variables, which may include the attachment expression or variable.

Claim Rejections - 35 USC § 103

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24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. Claims **2**, **12** and **25-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Wygodny** in view of Lindsey, US 5,896,536 (hereinafter **Lindsey**).

26. In regard to claim **2**, the rejections of base claim 1 are incorporated. But **Wygodny** does not expressly disclose "...imposing a condition onto the trigger expression and storing the state of the trigger expression only when the condition is satisfied. However, **Lindsey** discloses:

- "...*(a) imposing a condition onto the trigger expression; and (b) storing the state of the trigger expression only when the condition is satisfied.*"
(E.g., see Figure 6 & Column 8, lines 39-48), wherein a tracing operation is stored when a predetermined condition is detected (satisfied).

Wygodny and **Lyndsey** are analogous art because they are both concerned with the same field of endeavor, namely, tracing the execution path of a computer program. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to impose a trigger condition on **Wygodny's** tracing. The motivation to do so would have been to monitor the execution of the code based on selections or options from the user as suggested by **Wygodny** (Column 3, lines 7 –12),

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wherein the conditional trigger or expression would provide the user with further options.

Furthermore, **Lyndsey** suggests "...the ability to trigger the generation of trace data based upon a specific data component so that information can be obtained relative to the data component during execution of logic units would be a valuable tool for developers in the debugging of programs". Thus it would have been obvious, to a person of ordinary skill in the art to include a conditional trace-point or trigger with **Wygodny's** tracing method.

27. In regard to claim 12, **Wygodny** discloses:

- *"A method of tracing the activity of an expression in an executing computer program..."* (E.g., see Figure 2 & Column 4, lines 43-44), wherein a computer program being executed is traced.
- *"...(a) specifying the computer program in which a trigger expression resulting in an L value during the execution of the computer program is to be traced..."* (E.g., see Figure 1C & Column 8, lines 7-8), wherein the trace data may be a variable associated with an assembly address (memory location).
- *"...(b) specifying the trigger expression and any optional attachment expressions to be traced in the computer program...(e) creating a profile of the trigger expression comprising storing each snapshot; (f) displaying the profile such that each snapshot can be displayed separately; and (g) restoring the state of each snapshot, when requested."* (E.g., see Figure 3A & Column 18, lines 30-43), wherein

the developer can choose any arguments, return values and selected source lines, thereby storing the state of a chosen function and attached expressions or variables (profile), wherein trace can then be displayed according to the developers choice (restoring) when requested.

But **Wygodny** does not expressly disclose "imposing a condition onto the trigger expression. However, **Lyndsey** discloses:

- "...*(c) imposing a condition onto the trigger expression*(E.g., see Figure 6 & Column 8, lines 39-48), wherein a tracing operation is stored when a predetermined condition is detected (satisfied).

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to impose a trigger condition on **Wygodny's** tracing. The motivation to do so would have been to monitor the execution of the code based on selections or options from the user as suggested by **Wygodny** (Column 3, lines 7 –12), wherein the conditional trigger or expression would provide the user with further options. Furthermore, **Lyndsey** suggests "...the ability to trigger the generation of trace data based upon a specific data component so that information can be obtained relative to the data component during execution of logic units would be a valuable tool for developers in the debugging of programs". Thus it would have been obvious, to a person of ordinary skill in the art to include a conditional trace-point or trigger with **Wygodny's** tracing method.

28. In regard to claim **25**, **Wygodny** discloses:

- "...*(a) initiating a user interface to exchange data input/output with a user and an electronic processing apparatus...*" (E.g., see Figure 1C & Column 2, line 59-Column 3, line 1), wherein the user interface is initiated after the user starts the program.
- "...*(b) requesting a trigger expression from a user...*" (E.g., see Figure 5 & Column 13, lines 50-54), wherein the developer may specify which variables or expressions to be traced (520), wherein the execution of the traced variable triggers the trace. Furthermore, the developer opens a window that requires, or requests, the developers input.
- "...*(c) requesting a program identification of a program in which the trigger expression is to be traced...*" (E.g., see Figure 5 & Column 12, lines 44-47), wherein the trade option window allows the developer to specify, (requests from the user), which functions or machine-implemented process (program) to trace.
- "...*(d) causing the electronic processing apparatus to execute the identified program; (e) storing the state of the trigger expression each time a memory operation occurs to the trigger expression during the executing identified program without interrupting or otherwise stopping execution of the identified program as a snapshot...*" (E.g., see Figure 1C & Column 26, line 33-34), wherein the trigger happens (activity), storing the state of the trigger expression, whenever the address is

executed (memory operation), which takes place while the identified program is executing.

- "...*(f) maintaining the capability to restore each snapshot and display each snapshot to the user.*" (E.g., see Figure 1C & Column 8, lines 15-20), wherein the data stored or history is displayed (restored) according to filters set by the user allowing the user to display a particular triggered expression separately if desired.

But **Wygodny** does not expressly disclose "...an article of manufacture, comprising a data storage medium tangibly embodying a program of machine readable instructions executable by an electronic processing apparatus...". However, **Lyndsey** discloses:

- "*An article of manufacture, comprising a data storage medium tangibly embodying a program of machine readable instructions executable by an electronic processing apparatus...*" (E.g., see Figure 1 & Column 4, lines 48-61).

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to embody **Wygodny's** tracing instructions on an article of manufacture. The motivation to do so would have been to send the tracer program to the client as suggested by **Wygodny** (Column 3, lines 30-32), wherein the developer would not need to visit the remote site. Thus it would have been obvious, to a person of ordinary skill in the art to include a **Wygodny's** tracing program on an article of manufacture.

29. In regard to claim **26**, the rejections of base claim **20** are incorporated. But, **Wygodny** does not expressly disclose "...requesting the user to assign conditions to the trigger expression". But **Lyndsey** discloses:

- "...requesting the user to assign conditions to the trigger expression whereupon when the conditions are satisfied, a snapshot of the trigger expression is stored." (E.g., see Figure 5, (86) & Column 6, lines 59-61), wherein a tracing operation is stored when a predetermined condition is detected (satisfied), wherein the predetermined condition was input from the user (requested from the user) via the if condition (Figure 5, block 86).

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to impose a trigger condition on **Wygodny's** tracing. The motivation to do so would have been to monitor the execution of the code based on selections or options from the user as suggested by **Wygodny** (Column 3, lines 7 –12), wherein the conditional trigger or expression would provide the user with further options. Furthermore, **Lyndsey** suggests "...the ability to trigger the generation of trace data based upon a specific data component so that information can be obtained relative to the data component during execution of logic units would be a valuable tool for developers in the debugging of programs". Thus it would have been obvious, to a person of ordinary skill in the art to include a conditional trace-point or trigger with **Wygodny's** tracing method.

30. In regard to claim **27**, the rejections of base claim **25** are incorporated.

Furthermore, **Wygodny** discloses:

- "...requesting the user to indicate attached expressions whose states are also stored in a corresponding snapshot whenever a snapshot is stored for the trigger expression." (E.g., see Figure 3A & Column 18, lines 30-43), wherein the developer can choose any arguments, return values and selected source lines, thereby storing the state of a chosen function and attached expressions or variables (profile), wherein trace can then be displayed according to the developers choice (restoring) when requested.

Conclusion

31. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:


- DaSilva et al., US006493868B1
- Shagam, US006311326B1
- Hayes et al., US005140671A
- Swaine et al., US 20020147965A1

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J Romano whose telephone number is (571) 272-3872. The examiner can normally be reached on 8-5:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JJR



TUAN DAM
SUPERVISORY PATENT EXAMINER